WARZYN

October 17, 1991

Wayde M. Hartwick, RPM
Mailcode 5HS-11
U.S. Environmental Protection Agency
Region 5
230 S. Dearborn Street
Chicago, Illinois 60604

RE: Response to September 30, 1991 Comments
ACS Feasibility Study Report
Griffith, Indiana

Dear Mr. Hartwick:

Attached are our responses to your comments on the Feasibility Study Report for the ACS site described in your letter of September 30, 1991. For ease of review, we have retyped your comments and have included a response to each comment. We have also included revised pages of the Feasibility Study text to show that the changes have been made to the document. Changes to the document are shown in brackets. If you concur with the changes, we can assemble several copies of the document for your distribution to others at U.S. EPA and the Indiana Department of Environmental Management (IDEM).

Our responses to your comments and our changes to the text of the Feasibility Study Report are based on our discussions at you office on October 4, 1991. We appreciate you spending your time to understand our position on each of these comments. As we discussed in the meeting, we believed that we had responded to all of the comments requested by EPA in the July 18, 1991, from Robert Swale. I too thought that we had reached agreement on most of the major issues during our meeting on August 7, 1991, so that I was surprised by your letter of September 30, 1991. I think that most of these misunderstandings were resolved in our meeting of October 4, 1991. We certainly came out of the meeting with a better understanding of the task that you have in reviewing this document after being thrust into this project at such a late date. Hopefully, you have a better understanding that it is our intent to provide a high quality Feasibility Study for this site.

Please review the enclosed changes and provide me with your comments. We look forward to completing this project in an expeditious fashion. If you have any questions, please give me a call at (708) 691-5020.

Sincerely,

WARZYN INC.

Joseph D. Adams Jr., P.E.
Vice President

enclosure as stated

cc: A. Perellis, PRP Steering Committee

[CHI-501-63]
60251.30/MSR/ltr/JDA

THE PERFECT BALANCE
BETWEEN TECHNOLOGY
AND CREATIVITY

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ATTACHMENT
Response to U.S. EPA Comments on Draft Feasibility Study

General Comments on the Revised Feasibility Study Report

Agency Comment
U.S. EPA had requested a model on estimating the time required and costs associated with cleaning up the "offsite" aquifer. Warzyn had indicated that model development was premature at this point in time. I see no reason why computer modeling at this juncture would be premature. This appears to be the perfect time to investigate methods of restoring the "offsite" aquifer to beneficial use.

Response - The groundwater modeling that was conducted for the site is groundwater flow modeling, not contaminant transport modeling. The groundwater flow model is presented in Appendix A of the FS report. The model shows that all groundwater in the on-Site and off-Site areas will be contained by the pumping system. We have agreed to provide another iteration that shows that groundwater in the off-Site areas will also be contained.

We do not believe that a contaminant transport model is appropriate at this point because the model would be very cumbersome to develop, and the results would be no more accurate than the time estimates already presented in the FS Report. The actual time to complete the remedy at the Site can only be estimated after the groundwater pump and treat system is installed and several years of data are generated. This would then allow a transport model to be calibrated. A groundwater transport model without calibration would not be useful.

Agency Comment
It had been agreed that Alternatives 3 & 6 would be expanded to estimate the cost associated with removal of different quantities/risk levels of material. This is needed by the Agency in order to have a comprehensive array of alternatives to choose from. Warzyn indicated (on the day the report was delivered) that they had insufficient data to perform the necessary calculations. The Agency disagrees with this assertion and maintains that Warzyn perform the agreed upon calculation estimates.

Response - The remedial investigation was conducted in several phases. In the first phase, areas of contamination and types of contaminants were identified by collecting a relatively small number of samples and analyzing them for a wide variety of compounds. The data from Phase 1 showed that large areas of the Site were contaminated with volatile (VOCs) and semi-volatile organic compounds (SVOCs). The data suggested that there were several discrete areas that were contaminated with PCBs and metals . Therefore, a second phase of investigation was conducted in which many more sample locations were evaluated, but analytical testing was only conducted for VOCs and PCBs. A summary of all the data is shown in Table 5-2 of the RI Report. The table shows that SVOCs were detected wherever VOCs were found. PCBs and metals, however, are isolated to a few areas of the Site. Asterisks in the table represent the fact that those compounds were not analyzed for, not that the compounds were not detected.

In the volume and risk delineations developed by Robert Swale in his letter of July 18, 1991, all of the data included in Table 5-2 was considered, with asterisks considered as non-detects. Therefore, the delineation of soil volumes exceeding designated risk levels for SVOCs did not include areas where SVOC analyses were not performed.

This is inaccurate because it concludes that samples that were not analyzed for SVOC's did not contain SVOC's. Table 5-2 shows that for all samples where VOC's were detected, SVOC's were also detected. Therefore, it is not possible to differentiate areas of just VOC contamination in the waste or soil. We believe that it is more accurate to state, as we have, in the FS Report that for Alternatives 3 & 6, where VOC's will remain in place, SVOC's will also remain in place. Points that we have tried to make in the FS Report are that:

- The SVOCs that will remain are not mobile and have not significantly impacted groundwater at the Site
- The potential risk of leaving these compounds in place would be exposure to individuals under a future use scenario that includes excavation of the waste, which is unlikely
- The greater risk from contaminated waste and soils could be excavating waste that is now in an equilibrium state, but upon mixing for excavation could become incompatible.

Agency Comment
Warzyn had agreed to provide one backup sheet on cost estimates for each alternative. This was done as an Addendum to Appendix 5, however, Appendix 5 should be expanded to include a comparable level of detail, outlined in Attachment 5 of the original Agency comments.

Response - The cost presented in the FS Report are order-of-magnitude cost estimates with accuracies of +50, minus 30%. The purpose of the cost estimates are to be able to compare each of the alternatives relative to one another. For an alternative with a cost of $30 million, the cost presented in the FS Report would be accurate if the actual cost was $21 million or $45 million. We believe that the level of detail presented in our cost estimates are sufficient to allow comparison of the alternatives, and consistent with the type of cost estimate being generated. We have included backup sheets for each alternative so that the reader can understand how specific items within the cost estimates were generated. The example provided by U.S. EPA in Attachment 5 of the agency comments was developed using the Cost of Remedial Actions (CORA) cost estimating software package. While we agreed that the level of detail is greater, we do not believe that the accuracies of the estimates are any better. We are against providing details down to hundred dollar items because we believe that it gives the reader a false sense of security that the cost estimates are accurate to hundred dollar items. In addition, the cost estimate tables end up being several pages long and don't allow the reader to focus on to the few line items which really have the greatest impact on the cost. For instance, in Alternative 7A, the one line item for on-site incineration shows 135,000 cubic yards being incinerated at a cost of $450 per cubic yard for a total cost of $60.7 million. Providing greater detail to the surface water diversion line item of a lump sum of two hundred thousand dollar would not provide any more meaning to the overall cost estimate.

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Specific Comments on the Revised Feasibility Study Report

13. Section 1.6, p. 1-29, paragraph 1 - Breakup second added sentence into two sentences. The second sentence should begin, "If risks..." Deleted the second paragraph, it gives the impression the RA is a worthless exercise.

Response: The requested changes were made.

16. Section 1.6.1, p. 1-29, paragraph 1 - Add, "reasonable" after, "upon" in the first added sentence.

Response: The requested change was made.

19. Section 1.6.3, p. 1-30 - Add as the first sentence, "The current-land use scenario is a reasonable worst case situation that could occur if the site is left unchecked and unremediated with no action taken to minimize any migration from or direct exposure to contaminants at the site."

Response: The requested change was made.

23. Section 1.6.4, p. 1-31 - Recognize that bullets must be reevaluated based on the final Baseline Risk Assessment.

Response: The bullets will be reevaluated based on the final Baseline Risk Assessment (BRA).

26. Section 1.6.4, p. 1-32, paragraph 1 - Delete the added sentence. Delete, "unlikely" in the last sentence of the first paragraph.

Response: The requested change was made.

27. Section 1.6.5, p. 1-32 - This summary will be reviewed once the Ecological Assessment is finalized.

Response: The summary will be revised once the Ecological Assessment is finalized.

30. Section 2.1, p. 2-2, second bullet - Add the following to the end of the bullet, "... consistent with the risk levels defined in the ecological assessment."

Response: The requested change was made.

32. Section 2.1, p. 2-3, second bullet under Landfill - Add, "contaminated soils, sediments, surface water, and groundwater" after, "leachate."

Response: The requested change was made.

40. Section 2.5.2.4, p. 2-22, Dechlorination - If your basic assumptions are true, then I have no problem; however, I recently attended a seminar where dechlorination was discussed using a different reagent. I will supply you with more details when available.

Response: Dechlorination processes have been developed for specific compounds that can be treated under controlled conditions above-ground, such as PCBs from transformers. The process could be applied to PCBs and some of the chlorinated VOCs at the site. However, they have not been used in-situ, and there are many other technologies that would address the wide range of contaminants that are in the waste and soils at the site. Therefore, it has not been considered for further evaluation at this site.

50. Comments may need to be addressed depending on the final Baseline Risk Assessment.

Response: These comments will be revised based on the final BRA.

53. Section 3.1.2, p. 3-3, third bullet - Was the assumption discussed in this comment deleted simply because it referred to the landfill?

Response: The third assumption was deleted in order to avoid the misinterpretation that groundwater underneath the Griffith Landfill should be extracted for treatment. With the inclusion of groundwater modeling results in Appendix A, this assumption no longer needs to be part of the text. The proposed groundwater extraction system is designed to contain off-Site groundwater movement.

58. Section 3.3.2, p. 3-13, Cost - The bullet on construction a slurry wall between the offsite containment area and the Griffith Landfill was added on the previous page, but not considered in the cost discussion.

Response: The decision to use a slurry wall between the off-Site Containment Area and the Griffith Landfill is separate and independent of the other three slurry wall options. Therefore, a discussion of its cost relative to the other three options is not appropriate. This point was added to the FS text as requested.

59. Section 3.3.3, p. 3-14, first paragraph - No discussion on the changes in wetland hydrology were included here.

Response: The modeling of the groundwater pump and treat system included in Appendix A shows that the system will not impact the hydrology of the wetlands. Therefore, we have not included a discussion on changes in the wetland hydrology.

63. Section 3.3.4.1, p. 3-16, Implementability - Include a discussion on the 12-inch sewer line.

Response: The requested change was made.

66. Section 3.3.4.2, p. 3-18, first paragraph, last sentence - Eliminate the added sentence and add the following, "Discharge of treated ground water to the wetlands could be potentially of detrimental by radically changing the hydrologic balance. This might result in many species of plants and animals being eliminated or stressed by introducing a current or increasing water volume. Discharge would therefore have to be carefully controlled to prevent impacting existing plants and animals."

Response: The requested change was made.

67. Section 3.3.4.2, p. 3-18, first paragraph - After, "hydrophobic contaminants" add, "or pH dependent contaminants (e.g. metals)"

Response: There do not appear to be elevated concentration of heavy metals in sediments at the site. The sentence was revised to include "or pH dependent contaminants".

72. Section 3.3.6.1, p. 3-21, first paragraph - The sentence, "Clay-soil caps would be used in all other areas." Should be deleted. This assumption may not be true if soils within the risk range are left in place. RCRA cap ARARs must be considered.

Response: The sentence was modified to read that the selection of any capping/cover for the Site would be ARAR dependent.

76. Section 3.5.1.1, p. 3-39, first paragraph - The suggested deletion was not made and an expanded discussion was not included. Please refer to the referenced directive for guidance.

Response: A revised discussion was included on U.S. EPA guidance for obtaining treatability variances from RCRA land disposal restrictions for CERCLA response actions.

79. Section 3.6.2.3, p. 3-54, last paragraph, last sentence - You still need a period here.

Response: The requested change was made.

84. Comments may need to be addressed depending on the final Baseline Risk Assessment.

Response: Comments will be reviewed based on the final BRA.

87. Section 4.1.2, p. 4-2, first paragraph - The requested table summarizing assumed cleanup levels should be generated.

Response: Cleanup levels for waste, soil, or sediments have not been generated for the Site. Therefore, it is not appropriate to generate the table requested. Potential discharge criteria were identified, instead, in order to do preliminary design calculations and cost estimates for groundwater treatment process options.

88. I found no addendum to Table 4-8. Correction, It was addressed but not included in the right place.

Response: The addendum to Table 4-8 will be included directly after table 4-8.

– In Section 4.1.2, beginning on p. 4-3. a discussion was presented on why Warzyn can't do the risk/volume calculations we asked for. Why was 10 ppm considered the "appropriate level for soil volume delineation?" What is the risk level associated with this? Please include a discussion on how this level relates to assumed cleanup standards developed pursuant to comment #87.

Response: Soil volume delineations were made for several different concentrations of contaminants. The 10 ppm concentration level was considered appropriate because it encompassed all of the different areas of contamination investigated as part of the RI and because it is considered a practical action level for most of the non-incineration treatment technologies that were included in the detailed analysis. This level does not relate to assumed cleanup standards because as discussed in comment #87, cleanup standards were not developed for soils or waste.

90. Section 4.1.3, p. 4-9 on which U.S. EPA guidance documents is the 5% discount rate based?

Response: The 5% discount rate is based on U.S. EPA Guidance on Conducting Remedial Investigations and Feasibility Studies which was referenced in the text.

96. Section 4.2.3, p. 4-12 - Modeling is needed as discussed in the original comment.

Response: Discussion of modeling is included in response to the general comments at the beginning of this letter.

102. Section 4.2.4.2, p. 4-18, paragraph 2 - It should be stated that attempts to flush metals and hydrophobic contaminants from wetlands is unlikely to be effective.

Response: This sentence was deleted from each of the alternatives in lieu of the expanded discussion on wetlands and drainage ditch sediments which was added.

103. Section 4.2.6.1, p. 4-19, paragraph 2 - The discussion should also include that capping may be used to prevent short circuiting of the vapor extraction system and limit the dewatering of the upper aquifer due to excess precipitation. The discussion of the one-foot clay-soil cap in the first paragraph may not be appropriate.

Response: Covering is not necessary for the effective performance of vapor extraction. In this case, Site dewatering must already be performed in order to implement vapor extraction. This would negate the infiltration minimization benefit of covering the areas to be treated.

104. Section 4.2.7.1-4 - Was the table requested in this comment ever produced?

Response: The removal efficiencies and achievable effluent concentrations obtained from available case studies and data bases were included for illustration purposes only. It would not prove meaningful to apply these values to the contaminant matrix at the ACS Site since the contaminants and their respective concentrations are not necessarily analogous to those presented in the case studies and data bases. The information presented was used to make a qualitative assessment of the potential effectiveness of each of the groundwater treatment process options.

105. Section 4.2.7.1, p. 4-22, paragraph 3 - Original comment was not addressed.

Response: A sentence was be included that complex ions would be treated by the primary treatment system.

113. Section 4.2.7.4, p. 4-35, last paragraph - The problem of discharging warm water to natural surface water was addressed; however, it was discussed that if a heat exchanger is needed, capital and O & M costs would increase for the air stripping process option. Were these increases accounted for in Appendix B cost estimates?

Response: These costs were not accounted for in the Appendix B cost estimates because they would not have a significant influence on the overall cost of the air stripping option. Therefore, if required, the need for a heat exchanger would not have a significant impact on whether or not air stripping were used as an option. This point was added to the text.

116. Section 4.2.8.2, p. 4-40, first complete paragraph - The requested deletion was not made. Please delete sentences 4 & 5 in the first full paragraph on p. 4-40 and provide a complete discussion on why a variance on land-ban treatment standards may be appropriate (see comment #76).

Response: Response to this item was included in comment # 76.

124. Section 4.3.2, p. 4-44, first paragraph - The added provision of contaminated surface soils covered, "with a soil cover" may not be appropriate. It must be stated what the purpose of the soil cover is; prevent infiltration or dermal contact only? This should be discussed in the ARARs section of Alternative 2.

Response: It was stated that the purpose of the soil cover was to prevent direct contact. A discussion of capping ARARs is presented in Section 4.2.6.1 and Table 3-3.

--. On page 4-45, the three added paragraphs were included in response to which comment? How were the 10 ppm total VOC and 50 ppm PCB contaminant criteria selected? Once a final Ecological Assessment is in, this passage will need to be revisited.

Response: The 10 ppm total VOC criteria was discussed in the response to the comment after comment #88. The 50 ppm PCB contaminant criteria is based on TSCA guidance.

125. **Response: Numerous U.S. EPA comments were related to risks associated with wetlands sediments and the ineffectiveness of flushing contaminants with reinjected groundwater. A separate discussion of wetlands and drainage ditch sediments was added to the FS since these areas had not been thoroughly discussed previously. The intent of the additional text is to show that contaminant concentrations detected in the wetlands and drainage ditch sediments were minimal compared to the rest of the ACS Site, and that remedial process options already included in the FS (e.g., flushing, in-situ biological treatment) are the best remedial action approaches for the sediments.**

129. Section 4.3.2, p. 4-47, second paragraph - It should be noted that optimization of the system, possibly including an aggressive pump and treat system, will occur prior to the end of the 30-year time period to try to meet ARAR levels.

Response: The requested change was made.

135. Section 4.3.3, p. 4-50, third paragraph - The original comment asked for (among other things) a more thorough explanation on why 2% was chosen as a cutoff point for the treatment of buried wastes in this alternative. Now I see you've changed it to 1%. Why the change? Please include a discussion.

Response: The delineation of buried waste areas was based on a 1% total VOC criteria. The text change from 2% to 1% was done to make it consistent with Figure 4-1. A 1% total VOC criteria was considered to be a practical starting point to both represent free liquid presence, as well as contaminant concentrations amenable to remedial action process options included in the detailed analysis (e.g., biological treatment, vapor extraction).

136. Section 4.3.3, p.4-51, second full paragraph - This comment pertaining to the utilization of a catalytic incinerator was not addressed. Please include a discussion.

Response: The comment suggested that the catalytic incinerator used for the low temperature thermal treatment system could also be used for off gas from the air stripping system period. This was not considered because the low temperature thermal treatment unit will only be at the Site for a few years, while the

groundwater pump and treat system will operate for a much longer time. Therefore, treatment of off-gas from the air stripping system would be considered separately.

140. Section 4.3.3, p. 4-54, third paragraph - As mentioned in the previous comment, please include a discussion on the use of a catalytic incinerator.

Response: See response to comment # 136.

141. Section 4.3.3, p. 4-55, third paragraph, last sentence - Delete the word, "may" and add, "will likely."

Response: This sentence was modified as agreed upon in our meeting for each of the alternatives.

150. Section 4.3.5, p. 4-65 - Alternative 5 title should read, "Offsite incineration of buried drums and offsite disposal of miscellaneous debris." Also, as outlined in the original comment, removal of Kapica/Pazmey soils should be included in the title.

Response: The title for Alternative 5 was changed as requested. Removal of Kapica/Pazmey soils will not be included in the title because soil vapor extraction will be used to treat the soils in place.

152. Section 4.3.5, p. 4-66, second paragraph - You have established that the VOC contaminant "matrix" is similar between Verona Site and ACS. Now include a discussion on how Verona Site results can be extrapolated to likely concentrations at the ACS site. Also, change, "U.E. EPA" to, "U.S. EPA."

Response: A discussion on how the Verona Site results can be extrapolated to the ACS site was included.

154. Section 4.3.5, p. 4-68, paragraph 3 - It should be added that "it is unlikely that PCBs and other semi-volatile compounds would be "flushed" from wetland sediments during discharge."

Response: The discussion of PCBs and other semi-volatile organic compounds will be made similar for all of the alternatives.

156. Section 4.3.5, p. 4-69 - The point of this comment was that it may be difficult to extract VOCs due to the large number of SVOCs in the waste matrix. This should be included as a possible disadvantage in a separate paragraph.

Response: The "Implementability" section for Alternative 5 discusses potential issues associated with the presence of a non-aqueous phase. It is referenced in the FS as a "free waste" phase. This terminology is believed to be more appropriate than stating that "VOCs in the waste matrix are dissolved in SVOCs in the waste matrix."

157. Section 4.3.5, p. 4-70, first paragraph - Capping of residuals may have to meet RCRA & TSCA technical standards.

Response: We believe this comment is sufficiently addressed in the FS.

159. Section 4.3.5, p. 4-72, second paragraph - It must be stated at the end of the paragraph that, "these compounds of concern may present a risk in excess of the risk range under the future land-use scenario."

Response: The sentence was reworded to take out the "threat" wording.

161. Section 4.3.5, p.4-74, second paragraph - Add to the end, "Proper capping of the onsite area could aid in minimizing these problems by reducing the amount of infiltration into the vapor extraction areas."

Response: It was previously discussed that capping was not required to reduce infiltration into vapor extraction areas because the groundwater pump and treat system will be used to continually dewater these areas. (See comment # 103)

164. Section 4.3.6, Alternative 6B - Please include a discussion on using a catalytic incinerator in conjunction with the SVE system and air stripper.

Response: See the discussion on comments 136 and 140.

167. Section 4.3.6, Alternative 6B, compliance with ARARS - A discussion on discharge or reinjection to the site wetlands or upper aquifer should be added.

Response: The requirements for discharge or reinjection to Site wetlands or the upper aquifer are included in the ARARS Table 4-3.

169. Section 4.3.7, p. 4-85, second paragraph - The advantages of using an air stripper with the LTTT system should be mentioned in this paragraph.

Response: See response to comments # 136 and # 140.

172. Section 4.3.7, p. 4-89, paragraph 1 - A statement that, "The reduction of toxicity and volume is not demonstrated for future site users." should be added.

Response: The section was revised to say that metals will be immobilized. The statement of "risk" was removed from the sentence.

175. Section 4.3.8, p. 4-94, first paragraph - After, "treatment cells" add, "(within the current area of contamination(AOC)).

Response: The requested change was made.

176. Section 5.0 - A section discussing the nine criteria for the Griffith Landfill may have to be added depending on the Baseline Risk Assessment.

Response: This may have to be added depending on the BRA.

184. Section 5.1, p. 5-3, fifth paragraph, last sentence - The following should be added, '...but would only marginally reduce the possibility of exposure to contaminated soils by future onsite users of the facility."

Response: The requested change was made.

186. Section 5.1, p. 5-5, The changes made in the Long-Term Effectiveness and Permanence section don't appear to reflect the suggestions made in the original comment.

Response: The section was revised to address long term performance criteria and the discussion was expanded.

187. Changes don't appear to reflect suggestions make in the original comment.

Response: The discussion was expanded.

188. Section 5.4, p. 5.7, third paragraph - Delete the first sentence; it's misleading and presents Alternative 2 as equal to the other Alternatives.

Response: The requested change was made.

189. Not Addressed.

Response: The steam stripping of buried waste process option was not shaded because it has been carried forward in the development of alternatives.

192. Not Addressed.

Response: A few sentences were included at the beginning of Appendix A to discuss that groundwater pumping and treating of the lower aquifer would not have a large impact on the shallow groundwater aquifer (and thus the wetlands).

193. There were numerous suggestions posed in this original comment. Many deal with providing vendor quotes that would help USEPA determine if Warzyn estimates are accurate. Warzyn indicated in our August 7 meeting that providing meaningful vendor quotes would be difficult due to their inherent variability and due to the typical vendor low-ball approach to make their technology more effective. USEPA agreed to be flexible in requiring Warzyn to submit vendor quotes, however, the backup sheets provided in Appendix B need more detail.

There are many other questions posed in comment #193 that were not addressed. If these questions were addressed some place else, then indicate where.

Response: A discussion of cost estimates was presented at the beginning of this comment letter.